

```
graph TD
    116[/CURRENT AUCTION INFORMATION/] --> 106[AUCTION BEHAVIOR SELECTOR]
    118[/PAST AUCTION INFORMATION/] --> 106
    106 --> 108[/DESIRED AUCTION BEHAVIOR/]
    106 --> 104[/CURRENT BIDDING STATUS/]
    108 --> 110[110]
    110 --> 112a[/RULE/]
    110 --> 112b[/RULE/]
    110 --> 112c[/RULE/]
    112a --> 100[AUCTION MANAGER]
    112b --> 100
    112c --> 100
    100 --> 102[/BID/]
    102 --> 100
    103[/OTHER BIDS/] --> 100
    100 --> 104
    104 --> 106
    104 --> 120[/MAXIMUM BID/]
    104 --> 122[/INCREMENT VALUE/]
    104 --> 114[114]
    114 --> 112d[/RULE/]
    112d --> 110
    112d --> 106
```

The flowchart illustrates the architecture of an auction system. It begins with **CURRENT AUCTION INFORMATION** (116) and **PAST AUCTION INFORMATION** (118) feeding into the **AUCTION BEHAVIOR SELECTOR** (106). The selector outputs **DESIRED AUCTION BEHAVIOR** (108) and **CURRENT BIDDING STATUS** (104). The behavior is processed by a **RULE SELECTOR** (110) to produce multiple **RULE** outputs (112), which are sent to the **AUCTION MANAGER** (100). The manager also receives **OTHER BIDS** (103) and generates a **BID** (102). The **CURRENT BIDDING STATUS** (104) is also fed into a **BID GENERATOR** (114), which also receives **MAXIMUM BID** (120) and **INCREMENT VALUE** (122). The generator produces a **RULE** (112) that is fed back into the **RULE SELECTOR** (110) and also directly into the **AUCTION BEHAVIOR SELECTOR** (106).

FIG. 1

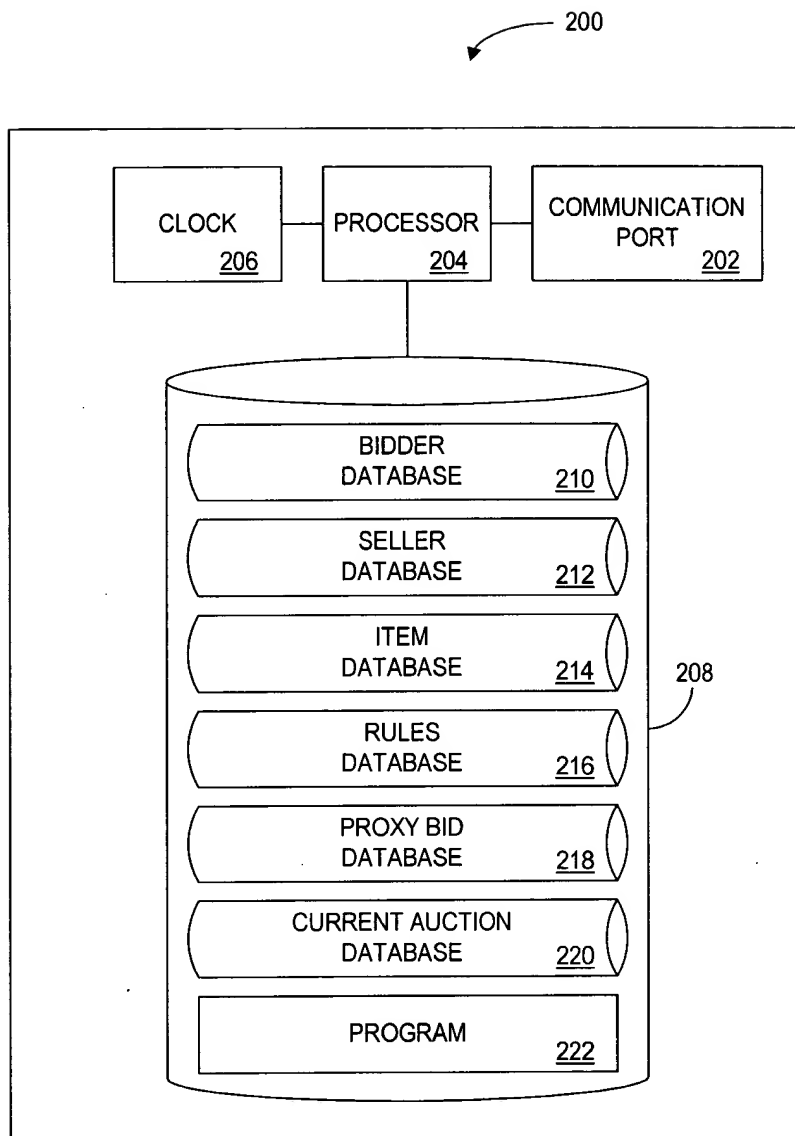


FIG. 2

300

BIDDER IDENTIFIER 304	NAME 306	MAILING ADDRESS 308	E-MAIL ADDRESS 310	PAYMENT IDENTIFIER 312
58675	KATIE VAN LIGHTIN	1061 CAMINO DE LA CRUZ SANTA FE, NM 87501	KTVL@ GRNOLA.NET	1111-2222- 3333-4444
68676	MAGGIE BOLD	P.O. BOX 2000 GREEN ACHRES, VA 21210	MAGS@ SHOTGUN.COM	2222-3333- 4444-5555
78677	TED DESK	32 CHURCH ST. BLANCHE, CT 06707	TDESK@ YAHOO.COM	3333-4444- 5555-6666
88678	JAMES GERONIMO	1327 SCENIC DR. PALO ALTO, CA 93432	JAMESG@ AOL.COM	4444-5555- 6666-7777

302

FIG. 3

400

SELLER IDENTIFIER 404	SELLER NAME 406	EMAIL ADDRESS 408	PAYMENT IDENTIFIER 410	ASSOCIATED ITEM IDENTIFIERS 412
S-9999	SARAH JONES	DEE@AL.COM	9999-8888-7777-6666	I-1234
S-8888	LYNN GODDARD	LG@CKE.COM	8888-7777-6666-5555	I-3456; I-9898; I-0099
S-7777	STEVE TUDOR	ST@US.COM	7777-6666-5555-4444	I-5699; I-8787
S-6666	TIMOTHY BOR	TIMB@POMP.COM	6666-5555-4444-3333	I-2424

402

FIG. 4

500

ITEM IDENTIFIER	ITEM DESCRIPTION	ITEM CATEGORY	SELLING PRICE	BEHAVIOR IDENTIFIER
I-1234	PLATINUM & PEARL DINNER RING CIRCA 1920	JEWELRY	N/A	B-B9765
I-2345	GLASS ROOSTER - PRE CIVIL WAR, 18" GREEN, YELLOW AND RED	ANIMAL FIGURINES	\$70.00	B-B8080
I-3456	ROLLER SKATES, 1928 - GOOD CONDITION, AUTHENTICATED.	ANTIQUE SPORTING EQUIPMENT	N/A	B-B7777
I-4567	TURN OF THE CENTURY PIE HUTCH - BEEN IN ONE FAMILY FOR 100 YEARS!! MUST SELL	ANTIQUE FURNISHINGS	\$140.00	B-B9862
I-5678	KARAOKE MACHINE PLUS TAPES, SHEET MUSIC - 80'S ROCK, EASY LISTENING FAVORITES	MUSICAL DEVICES	N/A	B-B2222

502

FIG. 5

600

BEHAVIOR IDENTIFIER 604	RULE IDENTIFIER 606	BEHAVIOR 608	RULE DESCRIPTION 610
B-B1234	R-111	CONSISTENT, WITH AVERAGE FREQUENCY EVERY 2-5 MINUTES	PLACE BID TWO MINUTES AFTER PREVIOUS WINNING BID IS RECEIVED
B-B3456	R-222	CONSISTENT, WITH AVERAGE FREQUENCY EVERY 2-5 MINUTES	PLACE BID 3 MINUTES AFTER PREVIOUS WINNING BID IS RECEIVED
B-B8888	R-333	INCREASE FREQUENCY AS AUCTION BECOMES COMPETITIVE	IF AVERAGE BIDDING SPEED INCREASES BY 15%, INCREASE BID PLACEMENT SPEED BY 10%
B-B9765	R-444	CONSISTENT, WITH FREQUENCY EVERY 20-50 MINUTES	PLACE BID 45 MINUTES AFTER PREVIOUS WINNING BID IS RECEIVED
B-B8080	R-555	DELAY OF AT LEAST FIVE MINUTES AFTER EVERY 1-3 BIDS	PLACE BID FIVE MINUTES AFTER EVERY THREE BIDS ARE RECEIVED

602

FIG. 6

0007ED 659E260

700

BIDDER IDENTIFIER 704	ITEM IDENTIFIER 706	RULE IDENTIFIER 708	BID CEILING 710
58675	I-1234	R-444	\$70.00
58675	I-3339	R-777	\$48.00
98245	I-4848	R-999	\$54.00
48652	I-5678	R-898	\$150.00

702

FIG. 7

800

ITEM IDENTIFIER:		I-1234		<u>802</u>
AUCTION START DATE/TIME:		10/21/99 8:00 A.M.		<u>804</u>
AUCTION END DATE/TIME:		10/23/99 8:00 A.M.		<u>806</u>
CURRENT NUMBER OF PARTICIPATING BIDDERS:		5		<u>808</u>
BID INCREMENT AMOUNT:		\$2.00		<u>810</u>
BIDDER IDENTIFIER <u>816</u>	BID AMOUNT <u>818</u>	BIDDING TIME <u>820</u>	TYPE OF BIDDER <u>822</u>	
00009	\$4.00	8:15 A.M.	MANUAL	<div style="font-size: 4em; line-height: 1;">}</div> 802
58675	\$6.00	9:00 A.M.	PROXY	
23232	\$8.00	10:00 A.M.	PROXY	
99989	\$20.00	10:05 A.M.	MANUAL	
58675	\$22.00	10:50 A.M.	PROXY	

814

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FIG. 8

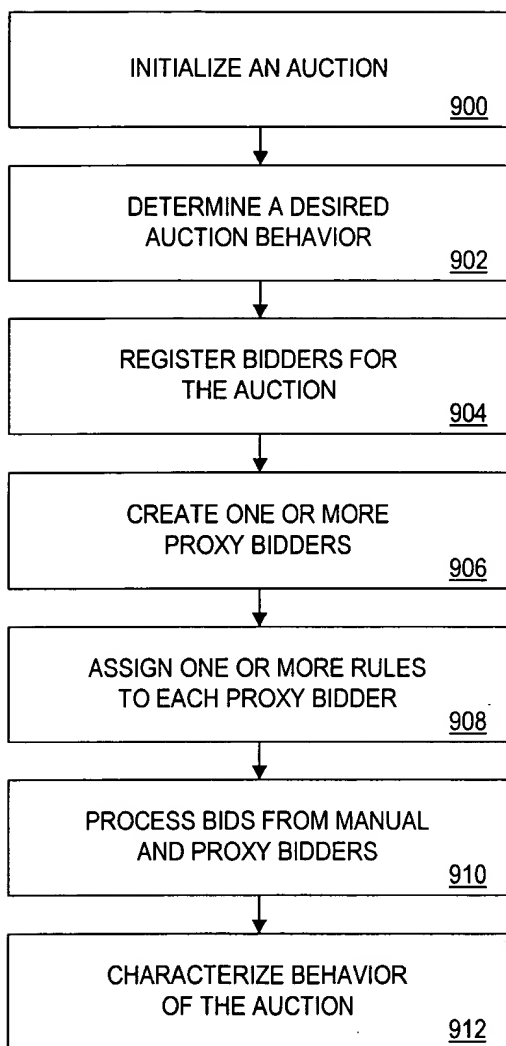


FIG. 9

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graph TD
    1000[RECEIVE SELLER AND  
ITEM INFORMATION] --> 1002[CREATE OR UPDATE SELLER AND  
ITEM DATABASE RECORDS]
    1002 --> 1004[CREATE AUCTION TABLE  
IN AUCTION DATABASE]

```

```

graph TD
    1100[RECEIVE INFORMATION ABOUT ONE OR MORE PRIOR AUCTIONS] --> 1102[COMPARE INFORMATION ABOUT THE CURRENT AUCTION TO THE RECEIVED INFORMATION]
    1102 --> 1104[SELECT BASED ON THE COMPARISON, ONE OR MORE PRIOR AUCTIONS]
    1104 --> 1106[UPDATE ITEM INFORMATION FOR CURRENT AUCTION WITH SELECTED BEHAVIOR]

```

FIG. 11

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graph TD
    1200[RECEIVE BIDDER INFORMATION] --> 1202[CREATE OR UPDATE RECORDS  
IN BIDDER DATABASE]
    1202 --> 1204[ASSOCIATE BIDDER WITH  
AUCTION FOR THE ITEM]

```

FIG. 12

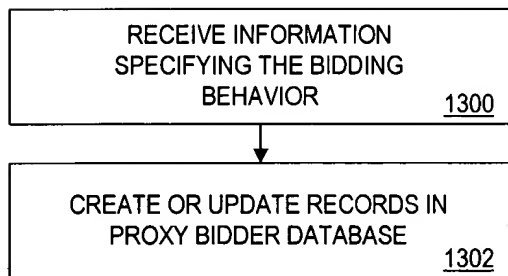


FIG. 13

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graph TD
    1400[RETRIEVE IDENTIFIER OF DESIRED AUCTION BEHAVIOR] --> 1402[SELECT A RULE IDENTIFIER]
    1402 --> 1404[STORE RULE IDENTIFIER IN PROXY BIDDER DATABASE]
  
```

FIG. 14

```

graph TD
    1500[RECEIVE BID 1500] --> 1502{BID COMPLIES WITH AUCTION RULES? 1502}
    1502 -- YES --> 1504[ADD ENTRY TO LIST IN CURRENT AUCTION DATABASE 1504]
    1502 -- NO --> 1506[REJECT BID 1506]
    1504 --> 1508{AUCTION OVER? 1508}
    1506 --> 1508
    1508 -- YES --> 1510[UPDATE ITEM DATABASE 1510]
    1508 -- NO --> 1500
  
```

FIG. 15

```
graph TD; 1600[COMPUTE TOTAL NUMBER OF BIDS] --> 1602[COMPUTE TOTAL TIME]; 1602 --> 1604[COMPUTE DIFFERENCE BETWEEN FIRST AND LAST BIDS]; 1604 --> 1606[COMPUTE AVERAGE FREQUENCY AND BID INCREMENT];
```

COMPUTE TOTAL NUMBER OF BIDS 1600

COMPUTE TOTAL TIME 1602

COMPUTE DIFFERENCE BETWEEN FIRST AND LAST BIDS 1604

COMPUTE AVERAGE FREQUENCY AND BID INCREMENT 1606

FIG. 16

```

graph TD
    1700[REVISE DESCRIPTION OF DESIRED  
AUCTION BEHAVIOR] --> 1702[DEFINE ONE OR MORE VARIABLES  
IN THE DESCRIPTION OF THE  
AUCTION BEHAVIOR]
    1702 --> 1704[GENERATE SPECIFIC RULES  
USING DEFINED VARIABLES]
    1704 --> 1706[STORE DEFINED RULES  
IN RULE DATABASE]
  
```

FIG. 17

```
graph TD
    BIDDER1812[(BIDDER 1812)] <--> REGISTER1810[REGISTER BIDDERS FOR AUCTION 1810]
    REGISTER1810 <--> AUCTION1806[(AUCTION 1806)]
    AUCTION1806 <--> BEHAVIOR1808[SELECT A DESIRED AUCTION BEHAVIOR 1808]
    AUCTION1806 --> INIT1800[INITIALIZE AN AUCTION 1800]
    INIT1800 <--> ITEM1804[(ITEM 1804)]
    INIT1800 <--> SELLER1802[(SELLER 1802)]
    ITEM1804 <--> PROCESS1822[PROCESS BIDS FROM MANUAL AND PROXY BIDDERS 1822]
    SELLER1802 <--> PROCESS1822
    PROCESS1822 <--> PROXY1816[(PROXY BIDDER 1816)]
    PROXY1816 <--> CREATE1814[CREATE ONE OR MORE PROXY BIDDERS 1814]
    CREATE1814 <--> PROXY1816
    AUCTION1806 --> CHARACTERIZE1824[CHARACTERIZE BEHAVIOR OF THE AUCTION 1824]
    CHARACTERIZE1824 <--> RULES1820[(RULES DATABASE 1820)]
    RULES1820 <--> CREATE1826[CREATE RULES 1826]
    CREATE1826 --> ASSIGN1818[ASSIGN ONE OR MORE RULES TO EACH PROXY BIDDER 1818]
    ASSIGN1818 --> PROCESS1822
    ASSIGN1818 --> AUCTION1806
```

The flowchart illustrates a system for proxy bidding in an auction. The process begins with a **BIDDER 1812** (cylinder) interacting with a **REGISTER BIDDERS FOR AUCTION 1810** (rectangle). This leads to the **AUCTION 1806** (cylinder), which is also connected to **SELECT A DESIRED AUCTION BEHAVIOR 1808** (rectangle). From the **AUCTION 1806**, the flow proceeds to **INITIALIZE AN AUCTION 1800** (rectangle). This step involves **ITEM 1804** (cylinder) and **SELLER 1802** (cylinder). The **INITIALIZE AN AUCTION 1800** step leads to **PROCESS BIDS FROM MANUAL AND PROXY BIDDERS 1822** (rectangle). This step is connected to **ITEM 1804**, **SELLER 1802**, and **PROXY BIDDER 1816** (cylinder). The **PROXY BIDDER 1816** is also connected to **CREATE ONE OR MORE PROXY BIDDERS 1814** (rectangle). The **PROCESS BIDS FROM MANUAL AND PROXY BIDDERS 1822** step leads to **ASSIGN ONE OR MORE RULES TO EACH PROXY BIDDER 1818** (rectangle). This step is connected to **PROXY BIDDER 1816** and **ASSIGN ONE OR MORE RULES TO EACH PROXY BIDDER 1818**. The **ASSIGN ONE OR MORE RULES TO EACH PROXY BIDDER 1818** step leads to **CHARACTERIZE BEHAVIOR OF THE AUCTION 1824** (rectangle). This step is connected to **AUCTION 1806** and **CHARACTERIZE BEHAVIOR OF THE AUCTION 1824**. The **CHARACTERIZE BEHAVIOR OF THE AUCTION 1824** step leads to **RULES DATABASE 1820** (cylinder). The **RULES DATABASE 1820** is connected to **CREATE RULES 1826** (rectangle). The **CREATE RULES 1826** step leads to **ASSIGN ONE OR MORE RULES TO EACH PROXY BIDDER 1818**. The **ASSIGN ONE OR MORE RULES TO EACH PROXY BIDDER 1818** step leads back to **PROCESS BIDS FROM MANUAL AND PROXY BIDDERS 1822**.

FIG. 18